

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in this application.

1. (Currently Amended) A composition comprising a curable admixture of
~~a bone substitute; and~~
a crosslinkable prepolymer, wherein the crosslinkable prepolymer comprises an anhydride of
 - (i) a monomer or oligomer of a diacid or multifunctional acid and
 - (ii) a carboxylic acid molecule which includes a crosslinkable group, wherein the crosslinkable group is an unsaturated hydrocarbon moiety;
~~a photoinitiator; and~~

one or both parts of a redox system containing an oxidizing component and a reducing component.

2. (Canceled)
3. (Canceled)
4. (Original) The composition of claim 1 wherein the crosslinkable prepolymer is linear with an unsaturated hydrocarbon moiety at each terminus.

5. (Original) The composition of claim 1 wherein the crosslinkable prepolymer comprises a dianhydride of a dicarboxylic acid monomer or oligomer and a carboxylic acid molecule comprising an unsaturated moiety.

6. (Original) The composition of claim 5, wherein the crosslinkable prepolymer comprises a methacrylic acid dianhydride of a monomer or oligomer of a diacid selected from the group consisting of sebacic acid and 1,3-bis(p-carboxyphenoxy)-alkane.

7. (Original) The composition of claim 6, wherein the 1,3-bis(p-carboxyphenoxy)-alkane is 1,3-bis(p-carboxyphenoxy)-propane.

8. (Original) The composition of claim 1, wherein the crosslinkable prepolymer further comprises a second anhydride of

- (i) a monomer or oligomer of a diacid or multifunctional acid and
- (ii) a carboxylic acid molecule which includes a crosslinkable group, wherein the crosslinkable group is an unsaturated hydrocarbon moiety, and

wherein the second anhydride is different from the first anhydride.

9. (Original) The composition of claim 8, wherein the first anhydride is a methacrylic acid dianhydride of a monomer or oligomer of sebacic acid; and the second anhydride is a methacrylic acid dianhydride of a monomer or oligomer of 1,3-bis(p-carboxyphenoxy)-alkane.

10. (Original) The composition of claim 8, wherein the ratio of the first anhydride to the second anhydride is from about 1:20 to about 20:1.

11. (Original) The composition of claim 9, wherein the ratio of the first anhydride to the second anhydride is from about 1:5 to about 5:1.

12. (Original) The composition of claim 9, wherein the ratio of the first anhydride to the second anhydride is from about 1:5 to about 1:1.

13. (Original) The composition of claim 9, wherein the ratio of the first anhydride to the second anhydride is from about 1:1 to about 1:5.

14. (Original) The composition of claim 1, wherein the bone substitute is an autograft, allograft, xenograft or alloplast or mixture thereof.

15. (Original) The composition of claim 14, wherein the alloplast is polymeric.

16. (Original) The composition of claim 1, wherein the bone substitute comprises porous micron-sized particles, each particle having a core layer of a first biocompatible polymeric material and a coating of a second biocompatible polymeric material surrounding the core layer, wherein the second polymeric material is hydrophilic and different in composition from the first polymeric material.

17. (Original) The composition of claim 16, wherein the diameter of the micron-sized particles is from about 250 microns to about 900 microns.

18. (Original) The composition of claim 16, wherein the first polymeric material is poly(methylmethacrylate).

19. (Original) The composition of claim 16, wherein the second polymeric material is a poly(hydroxyethylmethacrylate).

20. (Original) The composition of claim 16, wherein calcium hydroxide is distributed on the outer surface of and inside the micron-sized particles.

21. (Original) The composition of claim 1, wherein the ratio of the bone substitute to the crosslinkable prepolymer is from about 1:20 to 20:1.

22. (Original) The composition of claim 21, wherein the ratio of the bone substitute to the crosslinkable prepolymer is from about 1:2 to 2:1.

23. (Original) The composition of claim 1, further comprising a therapeutic agent.

24. (Currently Amended) A cured composition comprising a bone substitute and a crosslinked prepolymer, wherein the prepolymer prior to crosslinking is one or more anhydride(s) of

(i) a monomer or oligomer of a diacid or multifunctional acid and

(ii) a carboxylic acid molecule which includes a crosslinkable group, wherein the crosslinkable group is an unsaturated hydrocarbon moiety,

wherein said composition is cured using a photoinitiator and one or both parts of a redox system containing an oxidizing component and a reducing component.

25. (Original) The cured composition of claim 24, wherein at least 20% (w/w) of the cured composition biodegrades in from about 6 to 10 weeks.

26. (Original) The cured composition of claim 25, wherein at least 50% (w/w) of the cured composition biodegrades in from about 6 to 10 weeks.

27. (Original) The cured composition of claim 24, wherein at least 20 % (w/w) of the cured composition biodegrades in from about 6 to 12 months.

28. (Original) The cured composition of claim 27, wherein at least 50% (w/w) of the cured composition biodegrades in from about 6 to 12 months

29. (Withdrawn, Currently Amended) A method of promoting bone generation comprising the steps of:

(A) applying to an area in need of such promotion a composition comprising a curable admixture of a bone substitute and a crosslinkable prepolymer, wherein the crosslinkable prepolymer comprises an anhydride of

(i) a monomer or oligomer of a diacid or multifunctional acid and

(ii) a carboxylic acid molecule which includes a crosslinkable group, wherein

the crosslinkable group is an unsaturated hydrocarbon moiety; and

(B) curing the composition, wherein curing comprises using a photoinitiator and one or both parts of a redox system containing an oxidizing component and a reducing component.

30. (Withdrawn, Currently Amended) A method of stabilizing a dental implant comprising the step of:

at least partially embedding a dental implant into a cured composition wherein the cured composition is obtained by curing a curable admixture of a bone substitute and a crosslinkable prepolymer, wherein the crosslinkable prepolymer comprises an anhydride of

- (i) a monomer or oligomer of a diacid or multifunctional acid and
- (ii) a carboxylic acid molecule which includes a crosslinkable group, wherein the crosslinkable group is an unsaturated hydrocarbon moiety

wherein said composition is cured using a photoinitiator and one or both parts of a redox system containing an oxidizing component and a reducing component.

31. (Withdrawn) The method of claim 30, wherein the dental implant is at least partially embedded into the cured composition by the steps of :

- (1) planting a dental implant into a bone and/or bone void;
- (2) at least partially embedding the dental implant by applying a curable admixture around the dental implant; and
- (3) curing the curable admixture to form the cured composite.

32. (Withdrawn) The method of claim 30, wherein the dental implant is at least partially embedded into the cured composition by the steps of:

- (1) at least partially filling a bone void by applying a curable admixture;
- (2) curing the curable admixture to form the cured composite; and
- (3) planting a dental implant into the bone by at least partially embedding the dental implant into the cured composite.

33. (Withdrawn, Currently Amended) A method of preparing objects of desired shape and size comprising the step of: curing in a mold a curable admixture of a bone substitute and a crosslinkable prepolymer, wherein the crosslinkable prepolymer comprises an anhydride of

- (i) a monomer or oligomer of a diacid or multifunctional acid and

(ii) a carboxylic acid molecule which includes a crosslinkable group, wherein the crosslinkable group is an unsaturated hydrocarbon moiety

wherein curing comprises using a photoinitiator and one or both parts of a redox system containing an oxidizing component and a reducing component.

34. (Withdrawn) A method of drug delivery comprising the steps of:

(A) applying to an area in need of drug delivery a composition comprising a curable admixture of a bone substitute and a crosslinkable prepolymer, and a therapeutic agent,

wherein the crosslinkable prepolymer comprises an anhydride of

(i) a monomer or oligomer of a diacid or multifunctional acid and

(ii) a carboxylic acid molecule which includes a crosslinkable group, wherein the crosslinkable group is an unsaturated hydrocarbon moiety; and

(B) curing the composition, wherein curing comprises using a photoinitiator and one or both parts of a redox system containing an oxidizing component and a reducing component.

Claims 35 – 93. (Canceled)

94. (Original) A composition comprising a curable admixture of

(A) a polymeric bone substitute;

(B) a crosslinkable prepolymer, comprising an anhydride of

(i) a monomer or oligomer of a diacid or multifunctional acid and

(ii) a carboxylic acid molecule which includes a crosslinkable group, having an unsaturated hydrocarbon moiety;

(C) a photoinitiator; and

one or both parts of a redox system containing an oxidizing component and a reducing component.

95. (Original) A method of forming a cured composition comprising:

(A) forming a curable admixture of

- (i) a polymeric bone substitute;
- (ii) a crosslinkable prepolymer comprising an anhydride of a monomer or oligomer of a diacid or multifunctional acid and a carboxylic acid molecule which includes a crosslinkable group having an unsaturated hydrocarbon moiety;
- (iii) a photoinitiator; and
- (iv) a redox system comprising an oxidizing component and a reducing component;

(B) partially curing said admixture by the reaction of the two component of the redox system; and

(C) exposing the partially cured curable admixture to sufficient radiation to photopolymerize said partially cured curable admixture.

Claims 96 – 99 (Canceled)

100. (New) The composition of claim 1, further comprising a bone promoting agent.

101. (New) The composition of claim 100, wherein the bone promoting agent is a basic fibroblast growth factor.

102. (New) The cured composition of claim 24, further comprising a bone promoting agent.

103. (New) The cured composition of claim 102, wherein the bone promoting agent is a basic fibroblast growth factor.